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This is the report of the Engineering Education Improvement Committee charged with (1) studying existing engineering and preengineering programs in Wisconsin's institutions of higher education, and (2) developing a high degree of correlation between the various engineering curricula of the University and the State colleges to permit students to do some pre-engineering work in the State Colleges and effectively transfer to the University for completion of their engineering studies.							
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ENGINEERING EDUCATION IMPROVEMENT IN WISCONSIN'S
PUBLIC INSTITUTIONS OF HIGHER EDUCATION

On June 20, 1958, the Coordinating Committee for Higher Education established a Joint Staff Engineering Education Committee. This committee was charged with the responsibility of:

1. Studying the existing engineering and pre-engineering programs in Wisconsin's institutions of higher education.
2. Developing a high degree of correlation between the various engineering curricula of the University and the state colleges to allow students to do some pre-engineering work in the state colleges and effectively transfer to the University for completion of their engineering studies.

Attached herewith is the report of the Engineering Education Improvement Committee. The Committee has studied the entire engineering curricula offerings at Wisconsin's public institutions of higher education. These studies, which include curricula outlines, are available at the Joint Staff office.

The liaison between the state colleges and the University has led to a mutual understanding of the problems in the highly specialized areas of engineering.

Observations

Pre-Engineering. Through conferences between representatives of the state colleges and the several department heads of the College of Engineering, University

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of Wisconsin, the existing pre-engineering program has been materially strengthened. In addition, many adaptations were made which brought the pre-engineering program at the state colleges into closer conformity with the needs of the College of Engineering at the University. This will provide a more effective opportunity for the students to do pre-engineering work at the state colleges and transfer to the University to complete the engineering degree program.

The Two-Degree Program. This kind of a program is designed to broaden the cultural background of the engineering graduate. It is a curriculum leading to a degree from a liberal arts college and an engineering degree from a professional school. Through this program a student may take three years of work at a state college and then transfer to the University College of Engineering. Upon completion of one more year of the prescribed curriculum, a liberal arts degree will be granted by the state college from which the student originated. This is in accord with the State College Board of Regents resolution #727 which states: "Resolved, that any Wisconsin State College be permitted to grant the Bachelor of Science or Bachelor of Arts degree to students who have completed three years of residence at that college and who have completed the requirements for the liberal arts degree after transfer to a professional school." In addition, upon completion of the additional specific requirements in the chosen field of engineering, a bachelor of science degree in engineering may be awarded by the University. The two-degree program will in no way interfere with the existing pre-engineering program.

Except for a small increase in instructional cost at Stevens Point College, this program will operate at no additional cost to the state, but will simply mean a regrouping of course offerings already provided. The two-degree program is in operation in other areas of the United States and has worked successfully,

though only a small number of students participate each year. However, the two-degree program does have merit and several of the state colleges are developing the necessary curricula patterns.

Recommendations

The Joint Staff recommends:

1. In order to keep abreast of a rapidly changing and advancing engineering curriculum the Engineering Education Improvement Committee be made a standing committee to meet at least once annually and report to the Joint Staff. This is in the best interest of providing the students with a continually improved engineering program.
2. The two-degree program should be developed with each college participating therein formulating its own program in cooperation with the University of Wisconsin Engineering College.
3. That the Coordinating Committee for Higher Education accept the report of the Engineering Education Improvement Committee.

ENGINEERING EDUCATION IMPROVEMENT COMMITTEE
WISCONSIN STATE COLLEGES AND THE UNIVERSITY OF WISCONSIN

Coordinating Committee for Higher Education
Madison, Wisconsin

Ladies and Gentlemen:

We are submitting herewith, a report of the activities of the Engineering Education Improvement Committee. An examination of the detailed report will show a concentration of activities in definite areas viz., 1. an understanding of current curricula in the College of Engineering,

2. an understanding of the various pre-engineering offerings in the State Colleges,

3. means of improving the pre-engineering offerings in the State Colleges,

4. the possibility of establishing a cooperative program between the State Colleges and the College of Engineering leading to a degree in liberal arts from the State College and an engineering degree from the University.

These areas, as will be noted in the report of the committee, received attention 1. by studies made by individual members of the committee,

2. by conferences scheduled between officials of the State Colleges and Department Heads of the College of Engineering,

3. by deliberation of the committee as a whole.

The results of these efforts revealed

1. that the State Colleges do contribute materially in pre-engineering training,

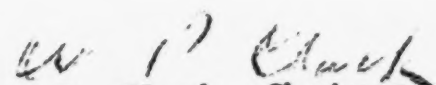
2. that many adaptations were suggested and made which brought the pre-engineering training into closer conformity with the current needs of the College of Engineering,

3. that the two-degree program was worthy of trial and many of the State Colleges have set up the necessary curricular patterns and will offer the program.

4. that aside from all formal aspects of committee work, the opportunity for personal and professional acquaintance between members of the State College Staffs and members of the University staff is of great value in establishing a basis of mutual understanding. This makes cooperation between the institutions much more effective and the professional association between the people involved, very pleasant.

With the foregoing in mind, the Engineering Education Improvement Committee hopes this relationship might continue. Since curricula change and staff personnel change, there will be value to be gained from maintaining the committee on the basis suggested at the end of our report.

Respectfully,


W. P. Clark, Chairman

Report to the Coordinating Committee for Higher Education
in Wisconsin

by the

Engineering Education Improvement Committee

The Engineering Education Improvement Committee was established by resolution of the Coordinating Committee for Higher Education on June 20, 1958. (Document 1)

The members of the committee were notified of their appointments by letter from Dean I. L. Baldwin, member of the Joint Staff, on August 15, 1958. Membership at that time was as follows: W. Parker Clark, WSC Eau Claire; Maurice O. Graff, WSC La Crosse; John Jarvis, Stout State College, Menomonie; Forrest R. Polk, WSC Oshkosh; Roger Guiles, WSC Platteville; Thorvald Thoreson, WSC River Falls; Roland A. Trytten, WSC Stevens Point; John Danielson, WSC Superior; Carroll Flanagan, WSC Whitewater; C. W. Ottensman, Institute of Technology, Platteville; R. A. Ragatz, UW Madison; H. A. Peterson, UW Madison; G. W. Washa, UW Madison; Edgar W. Lacy, UW Madison.

Before the first meeting was called, a change in membership resulted in the appointment of Paul J. Grogan, UW Madison in place of G. W. Washa.

During the year changes were occasioned by the merging of the two institutions at Platteville and the change in the Presidency at Oshkosh. These changes deprived the committee of Roger Guiles, Forrest Polk and C. W. Ottensman, and added James Duncan, WSC Oshkosh, and Milton A. Melcher, WSC and Institute of Technology, Platteville. (Documents 2 - 13)

The first of four meetings was called by Dean Baldwin for February 28, 1959. The first order of business was organization. Mr. Clark was elected chairman and Mr. Ragatz, secretary of the committee.

Mr. Baldwin indicated that one of the chief tasks of the committee would be to study the existing programs of pre-engineering training in the colleges, the existing programs of engineering at the University and work out the best possible correlation between the two areas in order to increase effective opportunity for students to do some of the work preliminary to engineering in the State Colleges.

Attention was called to the rapidly changing curriculum for engineers and the need for adaptation to these changes by the cooperating colleges. In order to get into the problem factually, work assignments were agreed upon for certain members of the committee.

Mr. Grogan undertook the task of preparing a mimeographed statement covering,

- (a) Recent changes in engineering curricula which have been approved by the faculty.
- (b) The mathematics requirements effective in September, 1959.
- (c) Procedures a student can follow if he does not have the high school preparation required for unqualified admission to the College of Engineering.

Mr. Flannagan agreed to make a compilation of the pre-engineering work at the freshman and sophomore levels in the State Colleges.

Mr. Peterson agreed to obtain data on the transfer to engineering this past September from each of the State Colleges.

Mr. Clark agreed to prepare a compilation of current enrollment in pre-engineering work at the freshman and sophomore levels in the State Colleges.

Mr. Ragatz agreed to correspond with the private liberal arts colleges in the state to obtain information regarding any co-operative programs, such as 3 - 2 programs, which are now in operation.

With these assignments made, the committee adjourned to meet again on April 18, 1959. (Document 3)

At the meeting of the committee on April 18, all of the reports previously assigned were presented and discussed. These are included in the file of supporting documents as follows:

An Analysis of U.W. College of Engineering Curricula	Document 5
The Report on Pre-Engineering Enrollment in the State Colleges - Flannagan	Document 6
Pre-Engineering Enrollment and Mortality in the State Colleges - Clark	Document 7
Transfers to the College of Engineering - Peterson	Document 8
A Study of 1958 Engineering Graduates - Peterson	Document 9
A Report on Pre-Engineering in the Private Colleges - Ragatz	Document 10

This was a valuable effort in that there resulted in the committee a much more complete understanding of the nature of the offerings in pre-engineering training in the State Colleges, the current curricula in the College of Engineering and the extent of participation of the State Colleges in terms of freshman and sophomore enrollments, and the end result of that training in terms of the number who eventually graduate as engineers.

Work was now under way which was contributing materially to the upgrading of pre-engineering offerings of the State Colleges and established a much improved acquaintance with the needs of the specialized departments of engineering.

In considering the whole process of preparing engineers, attention was called to the possibility of a joint program leading to a degree in liberal arts from the State Colleges and a degree in engineering from the University. Similar programs in Law and Medicine are already in operation and there seemed enough interest to warrant further study of the possibility.

The committee then passed the following resolution:

Resolved that the Engineering Education Improvement Committee favors the exploration by the faculties of the State Colleges, of the possibility of implementing a two-degree program in cooperation with engineering colleges accredited by the Engineers Council for Professional Development, permissible under the policies of the Board of Regents of the State Colleges according to Board Resolution 727.

The resolution referred to (727) was adopted at the March 19-20 meeting of the Board of Regents of the State Colleges and reads as follows:

Resolved, that any Wisconsin State College be permitted to grant the Bachelor of Science or Bachelor of Arts degree to students who have completed three years of residence at that college and who have completed the requirements for a liberal arts degree after transfer to a professional school.

The committee agreed to explore the interest of their respective faculties in the two-degree program and report prior to the next meeting which was set for July 11, 1959.

(Documents 4,5,6,7,8,9,10)

On July 11, 1959 the committee considered first, the reaction of the faculties to the two-degree program. There was enough interest to encourage the committee to continue the study. Mr. Schwehr, of the Joint Staff presented information he had secured through correspondence with institutions having in operation or having had experience with such programs. This is included in the file of supporting documents as, Schwehr report on two-degree programs in operation, Document 12. The consensus of the opinion gathered in his correspondence was interesting but not conclusive. Institutions seemed to agree that such a program, designed to broaden the cultural background of engineers was desirable. They could not, however, conclude from their placement experience that it was of any economic advantage to the student.

This committee agrees that any effort in the direction of a two-degree offering should not in any way interfere with the pre-engineering programs in operation. Rather, we suggest two responsibilities to the colleges. The first is to improve and continue our present pre-engineering offerings for the student who wishes to carry as much of his engineering program as possible at the State College prior to transfer to Madison, and who wishes to earn only the engineering degree. The other is to develop the two-degree program with each college formulating its own specific program.

To formalize the position of the committee the following motion was passed:

Moved that the Engineering Education Improvement Committee recommends the implementation of Resolution 727 of the Board of Regents of the State Colleges so as to lead to a two-degree program in the fields of engineering and liberal arts, in cooperation with engineering colleges accredited by the Engineers Council for Professional Development.

It was agreed that the best procedure for developing specific programs in cooperation with the College of Engineering, both in the current pre-engineering work and in the two-degree program, would be for each State College to send its committee representative accompanied by others vitally interested, to Madison for a one-day conference with the chairmen of the degree-giving departments of the College of Engineering. Mr. Ragatz offered to arrange for these conferences. As a result, during the fall and winter, representatives of the State Colleges met in conference with the several department chairmen and worked out their problems. This closer acquaintance and mutual understanding is one of the most valuable rewards to come from this committee effort, and bids to continue as a chief asset to the students who enter engineering training.

(Documents 11 - 12)

At the meeting held on February 27, 1960, oral reports on the progress made in the several colleges toward their two-degree programs and regular pre-engineering programs indicated that the conferences held with the departments of engineering were bearing fruit. Since the February meeting, each college has submitted to the committee a copy of their pre-engineering offerings and their two-degree programs if participating. So far, six of the nine institutions have entered the two-degree program in their offerings. Due to the specialized nature of Stout State College, with no liberal arts offering, it is not possible for them to engage in this program. The Institute of Technology has specialized curricula which place its interests in a different position also, regarding a need for a two-degree program. The committee will watch with interest the progress of the two-degree program as it becomes active.

It should be noted that with one exception, the two-degree offering will not entail any additional expense inasmuch as it constitutes a re-grouping of offerings already provided for. In the case of Stevens Point, a small increase in instructional cost is involved.

The afore-mentioned reports comprise document 14 in the supporting file for this committee report.

A motion was passed directing the chairman and secretary to be present when this report is presented to the Coordinating Committee for Higher Education.

The committee feels that the liaison established between the College of Engineering and the State Colleges is valuable and worthy of continuance. The committee passed a motion recommending the continuance of the Engineering Education Improvement Committee; that it meet at least once a year, the place of meeting to be rotated systematically amongst the schools represented on the committee.

A motion was passed to invite the chairmen of the College of Engineering departments not represented on the committee to future meetings that may be held.

The committee agreed informally to make copies of this report available to the private colleges in the state after it has been presented to the Coordinating Committee for Higher Education.

(Documents 13-14-15)

Respectfully submitted,

W. Parker Clark, W.S.C. Eau Claire,
Chairman

John Danielson, W.S.C. Superior

James Duncan, W.S.C. Oshkosh

Carroll Flanagan, W.S.C. Whitewater

Maurice O. Graff, W.S.C. LaCrosse

Paul J. Grogan, U. of W., Madison

John Jarvis, Stout State College,
Menomonie

Edgar W. Lacy, U. of W., Madison

Milton A. Melcher, W.S.C. & I.T.
Platteville

H. A. Peterson, U. of W., Madison

R. A. Ragatz, U. of W., Madison
Secretary

Thorvald Thoreson, W.S.C. River Falls

Roland A. Trytten, W.S.C.

Stevens Point

File of Documents Supporting the Report of the Engineering Education
Improvement Committee

- Document
- 1 The resolution establishing the committee.
 - 2 Letter appointing the personnel of the committee.
 - 3 Minutes of meeting of February 28, 1959.
 - 4 Minutes of meeting of April 18, 1959
 - 5 An analysis of U. W. College of Engineering curricula.
Grogan
 - 6 The report on pre-engineering enrollment in the State
Colleges. Flannagan
 - 7 Pre-engineering enrollment and mortality in the State
Colleges. Clark
 - 8 Transfers to the College of Engineering.
Peterson
 - 9 A study of 1958 engineering graduates.
Peterson
 - 10 Report on pre-engineering in the private colleges.
Ragatz
 - 11 Minutes of the meeting of July 11, 1959.
 - 12 Report on two degree programs in operation.
Schwehr
 - 13 Minutes of meeting of February 27, 1960.
 - 14 Reports from the State Colleges on their pre-engineering
programs and their two degree programs.
 - 15 Recent revisions in the curricula for Mechanical and
Civil Engineering.